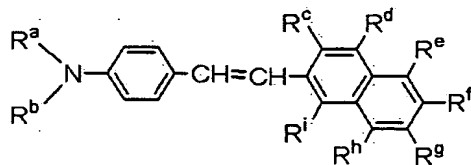


WHAT IS CLAIMED IS:

1. An organic electroluminescent device comprising an anode, a cathode, and an organic layer arranged between said anode and said cathode, wherein at least a part of said organic layer comprises at least one aminostyrylnaphthalene compound represented by the following formula [A]:

Formula [A]



wherein:

R^a and R^b may be the same or different and each independently represents a substituted or unsubstituted aryl group,

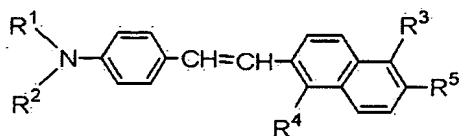
R^c, R^d, R^e, R^g, R^h and Rⁱ may be the same or different, at least one of R^c, R^d, R^e, R^g, R^h and Rⁱ independently represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one or ones of R^c, R^d, R^e, R^g, R^h and Rⁱ, if any, are each a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and

R^f represents a substituted or unsubstituted, saturated or unsaturated alkyl group, a substituted or

unsubstituted alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted alicyclic hydrocarbyloxy group or a substituted or unsubstituted aromatic hydrocarbyloxy group.

2. The organic electroluminescent device according to claim 1, wherein at least said part of said organic layer comprises at least one aminostyrylnaphthalene compound represented by the following formula [I], [II] or [III]:

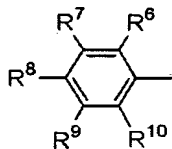
Formula [I]



wherein:

R^1 and R^2 may be the same or different and each independently represents a phenyl group represented by the following formula (1):

Formula (1)



wherein R^6 , R^7 , R^8 , R^9 and R^{10} may be the same or

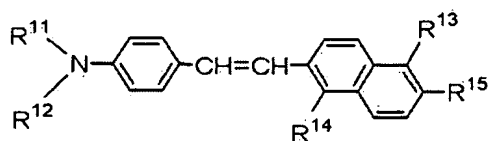
different, at least one of R^6 to R^{10} represents a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom with a proviso that, when at least two adjacent ones of R^6 to R^{10} each represents a saturated or unsaturated hydrocarbon group having at least one carbon atom, at least said two adjacent ones of R^6 to R^{10} may be fused together to form a ring, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom, and the remaining one or ones of R^6 to R^{10} , if any, are each a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom with a proviso that, when at least two adjacent ones of R^6 to R^{10} each represents a saturated or unsaturated hydrocarbon group having at least one carbon atom, at least said two adjacent ones of R^6 to R^{10} may be fused together to form a ring, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom,

R^3 and R^4 may be the same or different, one of R^3

and R⁴ represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and

R⁵ represents a substituted or unsubstituted, saturated or unsaturated alkyl group, a substituted or unsubstituted, alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted, alicyclic hydrocarbyloxy group, or a substituted or unsubstituted, aromatic hydrocarbyloxy group.

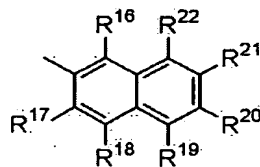
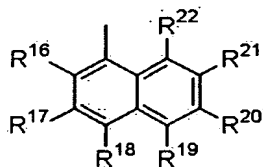
Formula [II]



wherein:

R¹¹ and R¹² may be the same or different and each independently represents a naphthyl group represented by the following formula (2):

Formula (2)



or

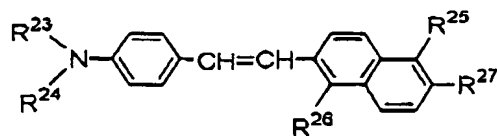
wherein R^{16} , R^{17} , R^{18} , R^{19} , R^{20} , R^{21} and R^{22} may be the same or different, at least one of R^{16} to R^{22} represents a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom, and the remaining one or ones of R^{16} to R^{22} , if any, are each a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom,

R^{13} and R^{14} may be the same or different, one of R^{13} and R^{14} represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a

halogen atom, and

R^{15} represents a substituted or unsubstituted, saturated or unsaturated alkyl group, a substituted or unsubstituted, alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxyl group, a substituted or unsubstituted, alicyclic hydrocarbyloxy group, or a substituted or unsubstituted, aromatic hydrocarbyloxy group.

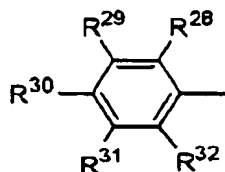
Formula [III]



wherein:

R^{23} is a phenyl group represented by the following formula (3):

Formula (3)

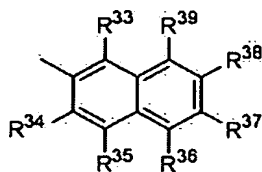
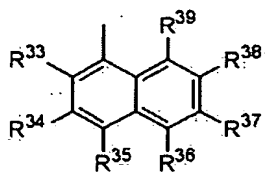


wherein R^{28} , R^{29} , R^{30} , R^{31} and R^{32} may be the same or different, at least one of R^{28} to R^{32} represents a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom with a proviso that, when at

least two adjacent ones of R^{28} to R^{32} each represents a saturated or unsaturated hydrocarbon group having at least one carbon atom, at least said two adjacent ones of R^{28} to R^{32} may be fused together to form a ring, a hydrocarbyloxy group having at least one carbon atom, a hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom, and the remaining one or ones of R^{28} to R^{32} , if any, are each a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom with a proviso that, when at least two adjacent ones of R^{28} to R^{32} each represents a saturated or unsaturated hydrocarbon group having at least one carbon atom, at least said two adjacent ones of R^{28} to R^{32} may be fused together to form a ring, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom,

R^{24} represents a naphthyl group represented by the following formula (4):

Formula (4)



or

wherein R³³, R³⁴, R³⁵, R³⁶, R³⁷, R³⁸ and R³⁹ may be the same or different, at least one of R³³ to R³⁹ represents a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom, and the remaining one or ones of R³³ to R³⁹, if any, are each a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom,

R²⁵ and R²⁶ may be the same or different, one of R²⁵ and R²⁶ represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a

halogen atom, and

R²⁷ represents a substituted or unsubstituted, saturated or unsaturated alkyl group, a substituted or unsubstituted, alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted, alicyclic hydrocarbyloxy group, or a substituted or unsubstituted, aromatic hydrocarbyloxy group.

3. The organic electroluminescent device according to claim 1, wherein said organic layer is in a form of an organic multilayer structure comprising a hole transport layer and an electron transport layer stacked one over the other, and at least said electron transport layer in said organic layer comprises at least said one aminostyrylnaphthalene compound.

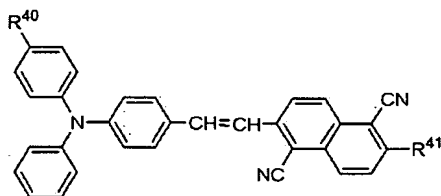
4. The organic electroluminescent device according to claim 1, wherein said organic layer is in a form of an organic multilayer structure comprising a hole transport layer and an electron transport layer stacked one over the other, and at least said hole transport layer in said organic layer comprises at least said one aminostyrylnaphthalene compound.

5. The organic electroluminescent device

according to claim 1, wherein said organic layer is in a form of an organic multilayer structure comprising a hole transport layer, a luminescent layer and an electron transport layer stacked one over another, and at least said luminescent layer in said organic layer comprises at least said one aminostyrylnaphthalene compound.

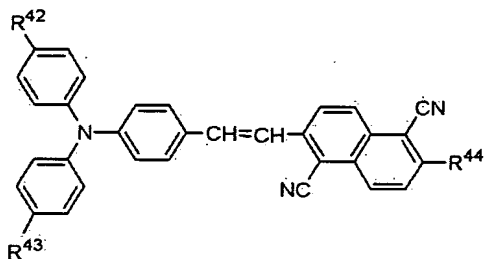
6. The organic electroluminescent device according to claim 2, wherein said aminostyrylnaphthalene compound is represented by the following formula (5), (6), (7), (8), (9), (10), (11), (12), (13), (14), (15), (16) or (17):

Formula (5)



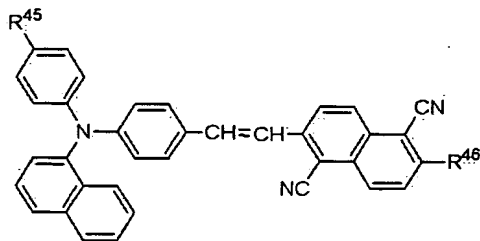
wherein R⁴⁰ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁴¹ has the same meaning as R⁵.

Formula (6)



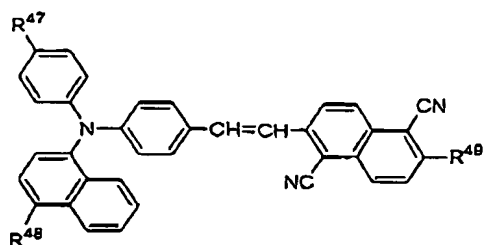
wherein R⁴² and R⁴³ may be the same or different and each independently represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁴⁴ has the same meaning as R⁵.

Formula (7)



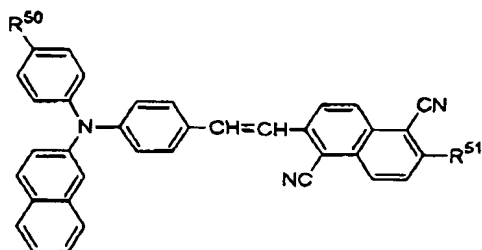
wherein R⁴⁵ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁴⁶ has the same meaning as R²⁷.

Formula (8)



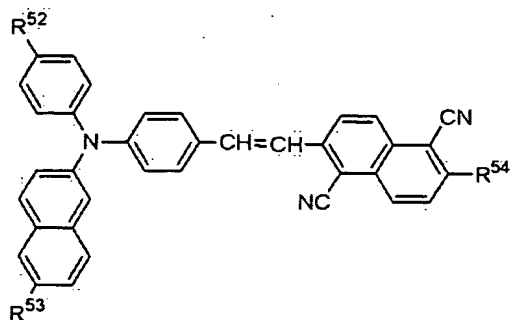
wherein R⁴⁷ and R⁴⁸ may be the same or different, one of R⁴⁷ and R⁴⁸ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, the remaining one of R⁴⁷ and R⁴⁸ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁴⁹ has the same meaning as R²⁷.

Formula (9)



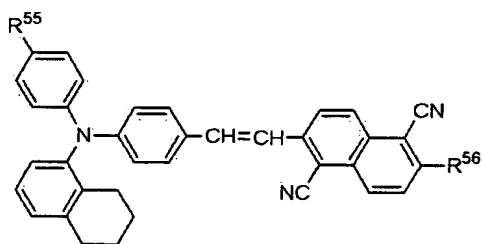
wherein R⁵⁰ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁵¹ has the same meaning as R²⁷.

Formula (10)



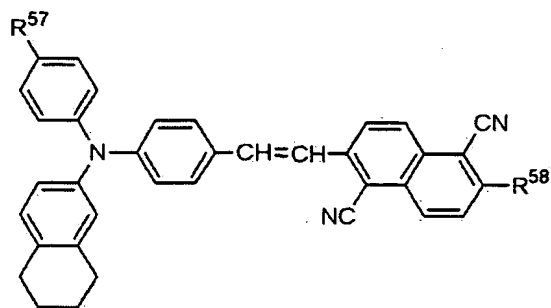
wherein R⁵² and R⁵³ may be the same or different, one of R⁵² and R⁵³ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, the remaining one of R⁵² and R⁵³ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁵⁴ has the same meaning as R²⁷.

Formula (11)



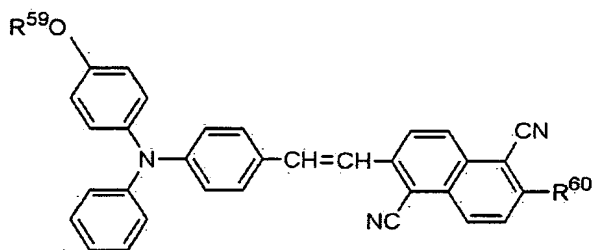
wherein R⁵⁵ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁵⁶ has the same meaning as R⁵.

Formula (12)



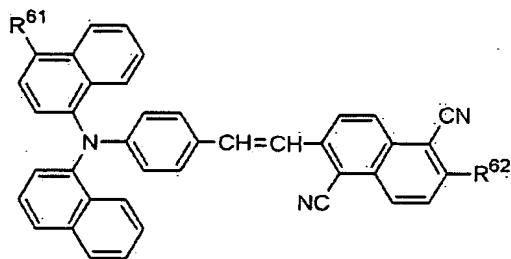
wherein R⁵⁷ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁵⁸ has the same meaning as R⁵.

Formula (13)



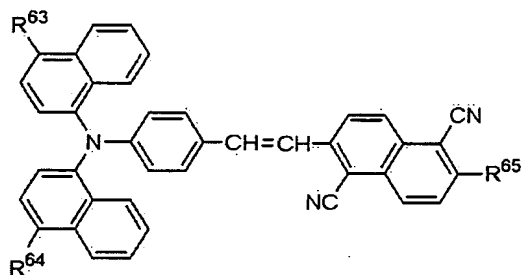
wherein R⁵⁹ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁶⁰ has the same meaning as R⁵.

Formula (14)



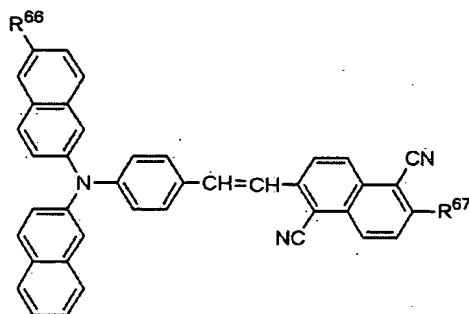
wherein R⁶¹ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁶² has the same meaning as R¹⁵.

Formula (15)



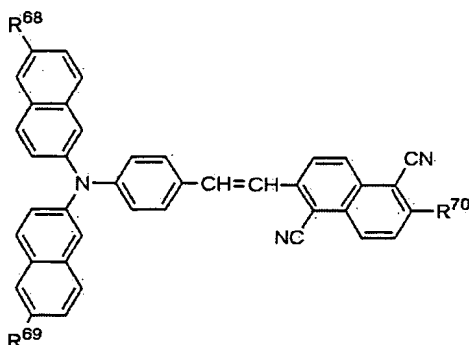
wherein R⁶³ and R⁶⁴ may be the same or different, one of R⁶³ and R⁶⁴ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, the remaining one of R⁶³ and R⁶⁴ represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R⁶⁵ has the same meaning as R¹⁵.

Formula (16)



wherein R^{66} represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R^{67} has the same meaning as R^{15} .

Formula (17)



wherein R^{68} and R^{69} may be the same or different, one of R^{68} and R^{69} represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, the remaining one of R^{68} and R^{69} represents a saturated or unsaturated alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group, and R^{70} has the same meaning as R^{15} .

7. An aminostyrylnaphthalene compound represented by the following formula [A]:

Formula [A]



wherein:

R^a and R^b may be the same or different and each independently represents a substituted or unsubstituted aryl group,

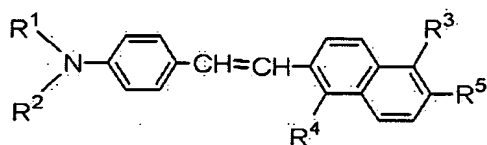
R^c , R^d , R^e , R^g , R^h and R^i may be the same or different, at least one of R^c , R^d , R^e , R^g , R^h and R^i independently represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one or ones of R^c , R^d , R^e , R^g , R^h and R^i , if any, are each a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and

R^f represents a substituted or unsubstituted, saturated or unsaturated alkyl group, a substituted or unsubstituted alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted alicyclic hydrocarbyloxy group or a

substituted or unsubstituted aromatic hydrocarbyloxy group.

8. The aminostyrylnaphthalene compound according to claim 7, which is represented by the following formula [I], [II] or [III]:

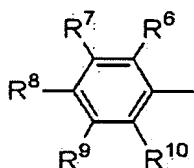
Formula [I]



wherein:

R^1 and R^2 may be the same or different and each independently represents a phenyl group represented by the following formula (1):

Formula (1)



wherein R^6 , R^7 , R^8 , R^9 and R^{10} may be the same or different, at least one of R^6 to R^{10} represents a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom with a proviso that, when at least two adjacent ones of R^6 to R^{10} each represents a saturated or unsaturated hydrocarbon group having at least one carbon atom, at least said two adjacent ones of

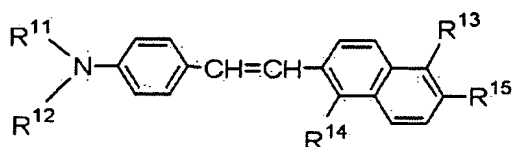
R^6 to R^{10} may be fused together to form a ring, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom, and the remaining one or ones of R^6 to R^{10} , if any, are each a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom with a proviso that, when at least two adjacent ones of R^6 to R^{10} each represents a saturated or unsaturated hydrocarbon group having at least one carbon atom, at least said two adjacent ones of R^6 to R^{10} may be fused together to form a ring, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom,

R^3 and R^4 may be the same or different, one of R^3 and R^4 represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and

R^5 represents a substituted or unsubstituted,

saturated or unsaturated alkyl group, a substituted or unsubstituted, alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted, alicyclic hydrocarbyloxy group, or a substituted or unsubstituted, aromatic hydrocarbyloxy group.

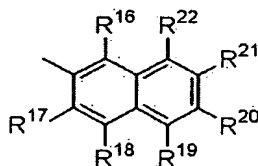
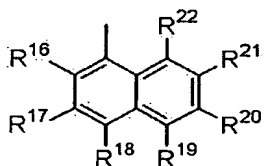
Formula [II]



wherein:

R^{11} and R^{12} may be the same or different and each independently represents a naphthyl group represented by the following formula (2):

Formula (2)



or

wherein R^{16} , R^{17} , R^{18} , R^{19} , R^{20} , R^{21} and R^{22} may be the same or different, at least one of R^{16} to R^{22} represents a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom, a

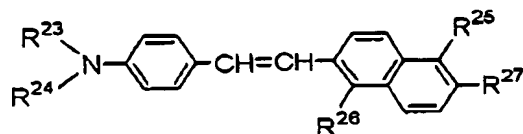
saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom, and the remaining one or ones of R^{16} to R^{22} , if any, are each a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom,

R^{13} and R^{14} may be the same or different, one of R^{13} and R^{14} represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and

R^{15} represents a substituted or unsubstituted, saturated or unsaturated alkyl group, a substituted or unsubstituted, alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxyl group, a substituted or unsubstituted, alicyclic hydrocarbyloxy group, or a substituted or unsubstituted, aromatic hydrocarbyloxy

group.

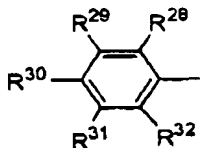
Formula [III]



wherein:

*R*²³ is a phenyl group represented by the following formula (3):

Formula (3)

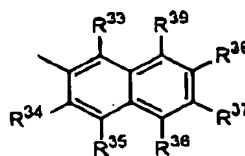
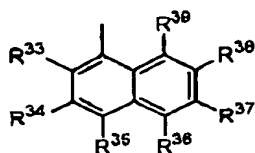


wherein *R*²⁸, *R*²⁹, *R*³⁰, *R*³¹ and *R*³² may be the same or different, at least one of *R*²⁸ to *R*³² represents a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom with a proviso that, when at least two adjacent ones of *R*²⁸ to *R*³¹ each represents a saturated or unsaturated hydrocarbon group having at least one carbon atom, at least said two adjacent ones of *R*²⁸ to *R*³² may be fused together to form a ring, a hydrocarbyloxy group having at least one carbon atom, a hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom, and the remaining one or ones of *R*²⁸ to *R*³², if any, are

each a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom with a proviso that, when at least two adjacent ones of R^{28} to R^{32} each represents a saturated or unsaturated hydrocarbon group having at least one carbon atom, at least said two adjacent ones of R^{28} to R^{32} may be fused together to form a ring, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom,

R^{24} represents a naphthyl group represented by the following formula (4):

Formula (4)



or

wherein R^{33} , R^{34} , R^{35} , R^{36} , R^{37} , R^{38} and R^{39} may be the same or different, at least one of R^{33} to R^{39} represents a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated

hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom, and the remaining one or ones of R^{33} to R^{39} , if any, are each a hydrogen atom, a saturated or unsaturated hydrocarbon group having at least one carbon atom, a saturated or unsaturated hydrocarbyloxy group having at least one carbon atom, a saturated or unsaturated hydrocarbylamino group having at least one carbon atom, a trifluoromethyl group, a cyano group or a halogen atom,

R^{25} and R^{26} may be the same or different, one of R^{25} and R^{26} represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and

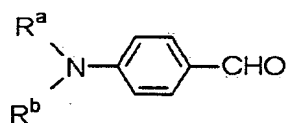
R^{27} represents a hydrogen atom, a substituted or unsubstituted, saturated or unsaturated alkyl group, a substituted or unsubstituted, alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxyl group, a substituted or unsubstituted, alicyclic hydrocarbyloxy group, or a substituted or unsubstituted, aromatic hydrocarbyloxy group.

9. The aminostyrylnaphthalene compound according

to claim 8, which is represented by the formula (5), (6), (7), (8), (9), (10), (11), (12), (13), (14), (15), (16) or (17) as defined in claim 6.

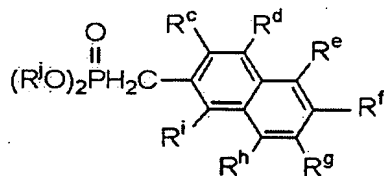
10. The process for the production of an aminostyrylnaphthalene compound represented by the formula [A] as defined in claim 7, which comprises subjecting a 4-aminobenzaldehyde represented by the following formula [B] and at least one of a phosphonate ester represented by the following formula [C] and a phosphonium represented by the following formula [D] to condensation:

Formula [B]

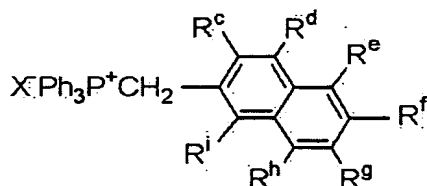


wherein R^a and R^b have the same meanings as defined above.

Formula [C]



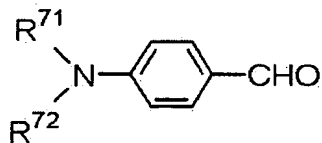
Formula [D]



Wherein R^j represents a hydrocarbon group, R^c , R^d , R^e , R^f , R^g , R^h and R^i have the same meanings as defined above, and X represents a halogen atom.

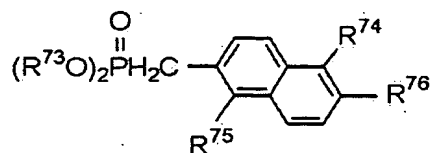
11. The process for the production of an aminostyrylnaphthalene compound represented by the formula [I], [II] or [III] as defined in claim 8, which comprises subjecting a 4-(N,N-diarylamino)benzaldehyde represented by the following formula [IV] and at least one of a phosphonate ester represented by the following formula [V] and a phosphonium represented by the following formula [VI] to condensation:

Formula [IV]

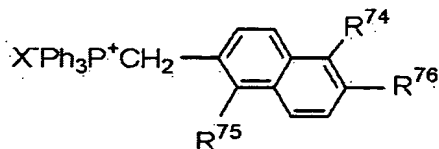


wherein R^{71} and R^{72} each independently represents an aryl group corresponding to R^1 , R^2 , R^{11} , R^{12} , R^{23} or R^{24} as defined above.

Formula [V]



Formula [VI]



wherein R^{73} represents a hydrocarbon group, R^{74} and R^{75} each independently represents a group corresponding to R^3 , R^4 , R^{13} , R^{14} , R^{25} or R^{26} as defined above, R^{76} represents a group corresponding to R^5 , R^{15} or R^{27} as defined above, and X represents a halogen atom.

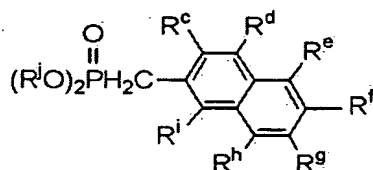
12. The process according to claim 10, wherein said condensation is conducted by the Wittig-Horner reaction, at least one of said phosphonate ester and said phosphonium is treated with a base in a solvent to form carbanions, and said carbanions and said 4-(N,N-diarylamino)benzaldehyde are subjected to condensation.

13. The process according to claim 10, wherein said condensation is conducted by the Wittig reaction, at least one of said phosphonate ester and said phosphonium is treated with a base in a solvent to form carbanions, and said carbanions and said 4-(N,N-diarylamino)benzaldehyde are subjected to condensation.

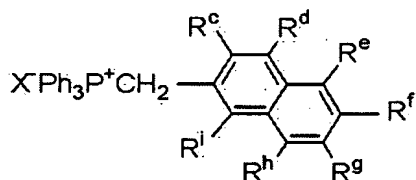
14. The process according to claim 11, wherein an aminostyrylnaphthalene compound represented by the formula (5), (6), (7), (8), (9), (10), (11), (12), (13), (14), (15), (16) or (17) as defined in claim 6 is obtained.

15. The phosphonate ester or phosphonium represented by the following formula [C] or [D] as defined in claim 10:

Formula [C]



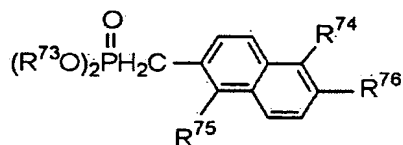
Formula [D]



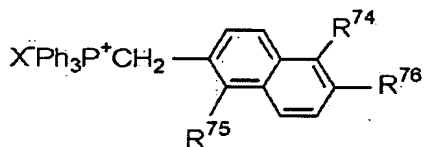
wherein R^j represents a hydrocarbon group, R^c, R^d, R^e, R^f, R^g, R^h and Rⁱ have the same meanings as defined above, and X represents a halogen atom.

16. The phosphonate ester or phosphonium as described in claim 11, which is represented by the following formula [V] or [VI]:

Formula [V]



Formula [VI]

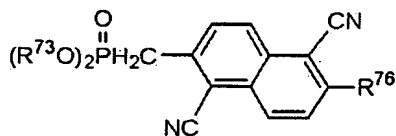


wherein R^{73} represents a hydrocarbon group, R^{74} and R^{75} each independently represents a group corresponding to R^3 , R^4 , R^{13} , R^{14} , R^{25} or R^{26} , R^{76} represents a group corresponding to R^5 , R^{15} or R^{27} , and X represents a halogen atom.

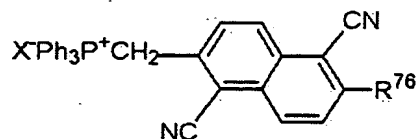
17. The phosphonate ester according to claim 16, wherein R^{73} represents a saturated hydrocarbon group having 1 to 4 carbon atoms.

18. The phosphonate ester or phosphonium according to claim 16, which is represented by the following formula (18) or (19):

Formula (18)



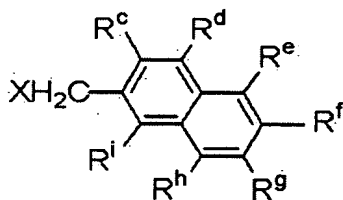
Formula (19)



wherein R^{73} , R^{76} and X have the same meanings as defined above.

19. The process for the production of a phosphonate ester or phosphonium represented by the formula [C] or [D] as defined in claim 15, which comprises reacting a halogenated aryl compound represented by the following formula [E] with a trialkyl phosphite represented by the following formula [F] or triphenylphosphine (PPh_3):

Formula [E]



Formula [F]

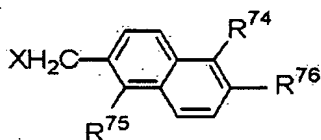


wherein R^c , R^d , R^e , R^f , R^g , R^h , R^i and X have the same meanings as defined above, and R^j represents a hydrocarbon group.

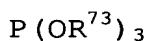
20. The process for the production of a phosphonate ester or phosphonium represented by the

formula [V] or [VI] as defined in claim 16, which comprises reacting a halogenated aryl compound represented by the following formula [VII] with a trialkyl phosphite represented by the following formula [VIII] or triphenylphosphine (PPh₃):

Formula [VII]



Formula [VIII]



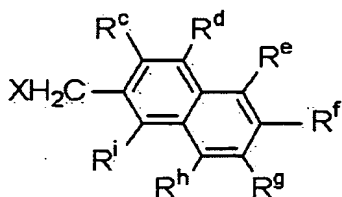
wherein R⁷⁴, R⁷⁵, R⁷⁶ and X have the same meanings as defined in claim 11, and R⁷³ represents a hydrocarbon group.

21. The process according to claim 20, wherein R⁷³ represents a saturated hydrocarbon group having 1 to 4 carbon atoms.

22. The process according to claim 20, wherein a phosphonate ester or phosphonium represented by the formula (18) or (19) as defined in claim 18 is obtained.

23. A halogenated aryl compound represented by the following formula [E]:

Formula [E]



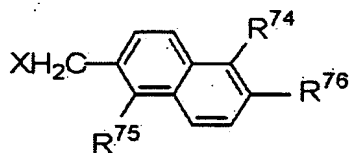
wherein:

R^c , R^d , R^e , R^g , R^h and R^i may be the same or different, at least one of R^c , R^d , R^e , R^g , R^h and R^i independently represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one or ones of R^c , R^d , R^e , R^g , R^h and R^i , if any, are each a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and

R^f represents a substituted or unsubstituted, saturated or unsaturated alkyl group, a substituted or unsubstituted alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted alicyclic hydrocarbyloxy group or a substituted or unsubstituted aromatic hydrocarbyloxy group.

24. A halogenated aryl compound according to claim 23, which is represented by the following formula [VII]:

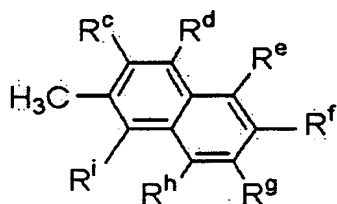
Formula [VII]



wherein R^{74} and R^{75} may be the same or different, one of R^{74} and R^{75} represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom, and the remaining one represents a hydrogen atom, a cyano group, a nitro group, a trifluoromethyl group or a halogen atom; R^{76} represents a substituted or unsubstituted, saturated or unsaturated alkyl group, a substituted or unsubstituted, alicyclic hydrocarbon group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxyl group, a substituted or unsubstituted, alicyclic hydrocarbyloxy group, or a substituted or unsubstituted, aromatic hydrocarbyloxy group; and X represents a halogen atom.

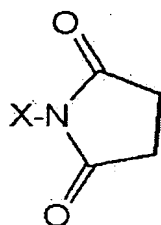
25. A process for the production of a halogenated aryl compound represented by the formula [VII] as defined in claim 23, which comprises reacting a naphthalene compound represented by the following formula [G] with an N-halogenated succinimide represented by the following formula [H]:

Formula [G]



wherein R^c , R^d , R^e , R^f , R^g , R^h and R^i have the same meanings as defined above.

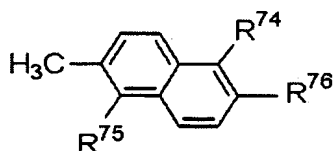
Formula [H]



wherein X represents a halogen atom.

26. The process according to claim 25, wherein a naphthalene compound represented by the following formula [IX] is used as said naphthalene compound to obtain a halogenated naphthalene compound represented by the formula [VII] as defined in claim 24.

Formula [IX]



wherein R^{74} , R^{75} and R^{76} have the same meanings as defined above.